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Industrial Environmental Research
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Cincinnati OH 45268

Research and Development

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Project Summary

Asbestos/Asbestiform Research in EPA ORD

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This report summarizes the current effects of the EPA Office of Research and Development laboratories to provide state-of-the-art research and development regarding asbestos and asbestos-like minerals.

The EPA asbestos/asbestiform research program encompasses a wide range of activity directed toward the control and management of mining, milling, processing, fabricating, and end uses of asbestos. Widespread applications of asbestos in the past have exposed large segments of the population to unknown risks. Research should provide valuable answers to numerous questions related to the use of and the exposure to asbestiform. Access to state-of-the-art research information is a necessary ingredient that enables programs of corrective action to be carried forward, minimizing environmental damage and risk.

Five agencies comprising the Interagency Regulatory Liaison Group (IRLG) signed an interagency agreement to improve public health through information exchange and to reduce waste and duplication in government. The IRLG consists of the Department of Agriculture, Consumer Product Safety Commission, Environmental Protection Agency, Food and Drug Administration and Occupational Safety and Health Administration. These agencies have established a cooperative endeavor to protect the public from exposure to harmful levels of toxic substances (the toxic substances can result from the use of consumer products, food and drugs in the workplace, or from exposure to contaminants in land, air or water) by the sharing of information and the development of consistent regulatory policy. This report is intended to update EPA's laboratory research programs dealing with asbestos and related asbestiform.

The final report was submitted in fulfillment of Contract No. 68-03-2673 by JACA Corporation, Management Consultants and Engineers, Fort Washington, PA, under the sponsorship of the Environmental Protection Agency.

This Project Summary was developed by EPA's Industrial Environmental Research Laboratory, Cincinnati, OH, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

The association of impaired human health with industrial exposure to asbestos is well known. Asbestosis (fibrosis of the lung) and pulmonary cancer are associated with the mining and milling of asbestos and the manufacture and use of asbestos products.

There is a need to define the various sources from which asbestos and asbestos-like minerals enter the environment, to establish subsequent health and environmental effects, and to examine possible control strategies that will offer current regulatory alternatives.

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In response to this need, the Office of Research and Development (ORD) is active in several areas of laboratory research. The following laboratories are involved in these asbestos-related research projects:

- Industrial Environmental Research Laboratory—Cincinnati (IERL-Ci)
- Municipal Environmental Research Laboratory—Cincinnati (MERL-Ci)
- Environmental Monitoring Systems Laboratory—Research Triangle Park (EMSL-RTP)
- Environmental Monitoring Systems Laboratory—Las Vegas (EMSL-LV)
- Health Effects Research Laboratory —Cincinnati (HERL-Ci)
- Health Effects Research Laboratory —Research Triangle Park (HERL-RTP)
- Environmental Research Laboratory—Duluth (ERL-Du)
- Environmental Sciences Research Laboratory—Research Triangle Park (ESRL-RTP)
- Environmental Research Laboratory—Athens (ERL-Ath)
- Environmental Research Laboratory—Gulf Breeze (ERL-GB)

The research encompasses: (1) control, removal, and disposal technologies; (2) monitoring and sampling techniques; (3) health effects; and (4) identification and measurement techniques.

Efforts are focused on the development of technologies for the safe and effective control, removal, and disposal of asbestos in both industrial and public buildings (IERL-Ci). The application of various treatment techniques for filtration of asbestos fibers in public water supply systems and the coating of asbestos-containing materials to prevent the entrance of asbestos into air and water are also being studied (MERL-Ci). The development of these technologies will minimize human exposure to asbestos and asbestos-containing materials.

Extensive monitoring and sampling are conducted to develop an asbestos standard, support revisions of existing standards (EMSL-RTP), and respond to emergency requests for information (EMSL-LV).

Cooperative *in vivo* and *in vitro* studies, and mineralogical analyses are used to develop a predictive model for the analysis of asbestos-like minerals (HERL-RTP, ERL-Du). Epidemiological studies of occupational and non-occupational exposure are also being conducted. The results of these studies can provide health effects data useful for evaluating the risk of human exposure to asbestiform.

Epidemiological, animal, and cell culture studies are conducted in order to examine the health effects of drinking water containing asbestos (HERL-Ci). The accumulation of mineral fibers in aquatic organisms is also studied to extend the methodology for identifying and characterizing asbestos and asbestos-like fibers in tissue (ERL-Du, ERL-GB).

Research is continuing for the development and improvement of standard measurement methods of using the electron microscope in the analysis of both inhaled (ESRL-RTP) and ingested (ERL-Ath) asbestos fibers. Research is also being directed toward the development of non-electron, bulk, rapid, analytical methods that will be less costly and time-consuming, and toward the development of improved preparation and preservation methodology.

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***Orville Macomber** and **Thomas Powers** are the EPA Project Officers (see below).*

The complete report, entitled "Asbestos/Asbestiform Research in EPA ORD," Order No. PB 81-191 876; Cost $9.50, subject to change) will be available only from:

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